A NOTE ON THE HISTOPATHOLOGY OF A CASE OF EXPERIMENTAL CUTANEOUS LEISHMANIASIS

BY

S. ADLER

(*Microbiological Institute, Hebrew University, Jerusalem*)

(*Received for publication* 18 *October*, 1926)

PLATE XXXIII

The pathology of oriental sore has been frequently described, and in general the lesion has been considered to consist essentially of an infiltration in the corium of endothelial cells, plasma cells and lymphocytes. Changes in the epidermis which are entirely secondary to the infiltration of the corium have also been described. The histopathology of the following case of experimental Leishmaniasis is of interest for the following reasons :

1. The lesion occurred in the subcutaneous tissue.
2. Histologically the lesion was practically indistinguishable from tuberculosis.

History of the case.

Male *aet.* 27, inoculated 9.9.25 on two points on the left forearm with *Herpetomonas* from a naturally infected sandfly. *Phlebotomus papatasii.* The sandfly was caught in Jericho, 8.9.25, and dissected 9.9.25, in Jerusalem, the inoculation being performed immediately after dissection.

In January, 1926, the patient noted a hard nodule under the site of one of the inoculated points. The nodule was subcutaneous, not attached to the skin or deep tissue, and grew rapidly in size, being, on 14.4.26, 9 mm. in length by 6 mm. in breadth. Puncture, on 14.4.26, of the nodule through the skin revealed numerous Leishman-Donovan bodies. Cultures of *L. tropica* were obtained from the lesion on the following modification of Noguchi's Leptospira

medium, Agar 1 part, Locke's solution made up with 0·2 per cent. glucose 8 parts, and fresh rabbit serum 1 part. The nodule was frequently punctured between 14.4.26 and 18.7.26, and it was found that the numbers of the parasites decreased ; and smears made on 18.7.26 revealed no parasites, but cultures made on 18.7.26 and 19.7.26 were positive. By the middle of June, 1926, the nodule became attached to the skin, this attachment being due to trauma caused by frequent examinations, as will be shown later. It is interesting to note that although the skin was frequently punctured and parasites entered the puncture wound, no cutaneous lesion developed.

On 2.8.26 an incision through the skin above the nodule was made, one-half of the nodule together with the overlying skin was removed for histology and the other half was left *in situ*. The nodule was found to be 4·5 mm. in cross section.

Sections showed that the distance between the outer surface of the epidermis and the nearest point on the nodule was 2·5 mm., i.e., well out of reach of the proboscis of *Phlebotomus papatasii* which penetrates only about 300μ, i.e., about three-quarters of the length of the piercing parts are introduced into the skin. This explains why feeding experiments with *P. papatasii*, performed at a time when parasites were very numerous, all gave negative results.

The lesion itself was not encapsuled and consisted of a conglomeration of typical tubercles separated from each other by strands of connective tissue which were themselves infiltrated with lymphocytes, plasma cells, and endothelial cells. The tubercles were of varying stages of development, some recently formed, others showing advanced fibrosis and several caseation (Pl. XXXIII, fig. 1). The oldest lesions, i.e., those showing caseation, were not in the centre of the nodule, but were placed infralaterally about 4·5 mm. below the surface of the epidermis. Since in performing the experiment the skin was scarified and the *Herpetemonas* were inoculated into the scarified points, the flagellates could have reached 4·5 mm. below the surface of the epidermis either by penetrating through the tissues or by being carried by the blood stream and settling in the endothelial cells of a neighbouring capillary—probably the latter, for *Herpetemonas* shows no capacity for active penetration. It appears that the

pathological process in all cases of cutaneous Leishmaniasis commences in the endothelial cells of a capillary, for sections show that infiltration of endothelial cells are usually round a capillary and, further, parasites are found in endothelial cells lining capillaries. In the present case a focus consisting of endothelial cells and plasma cells, the former being stuffed with parasites, was found near the centre of the lesion (Pl. XXXIII, fig. 4). In other parts the parasites were either absent or too few to be diagnosed histologically with certainty.

The epidermis was normal and the corium showed widely-scattered areas of infiltration consisting mainly of fibro-blasts with some small round cells and plasma cells. These infiltrated areas were not continuous with the main lesion from which they differed histologically in the absence of endothelial cells and giant cells which were such a marked feature of the main lesion ; they could, therefore, only have been caused by the trauma incidental to the frequent examinations.

EXPLANATION OF PLATE XXXIII

Fig. 1. Section through lesion. × 16.
(*a*) Scattered areas of infiltration in corium.
(*b*) Tubercles.
(*c*) Large caseating tubercle.
Microphotograph in two parts.

Fig. 2. Portion of a tubercle showing giant cells. × 370.

Fig. 3. Portion of a tubercle showing giant cells. × 85.

Fig. 4. Endothelial cell in centre of lesion containing numerous Leishman-Donovan bodies. × 750.

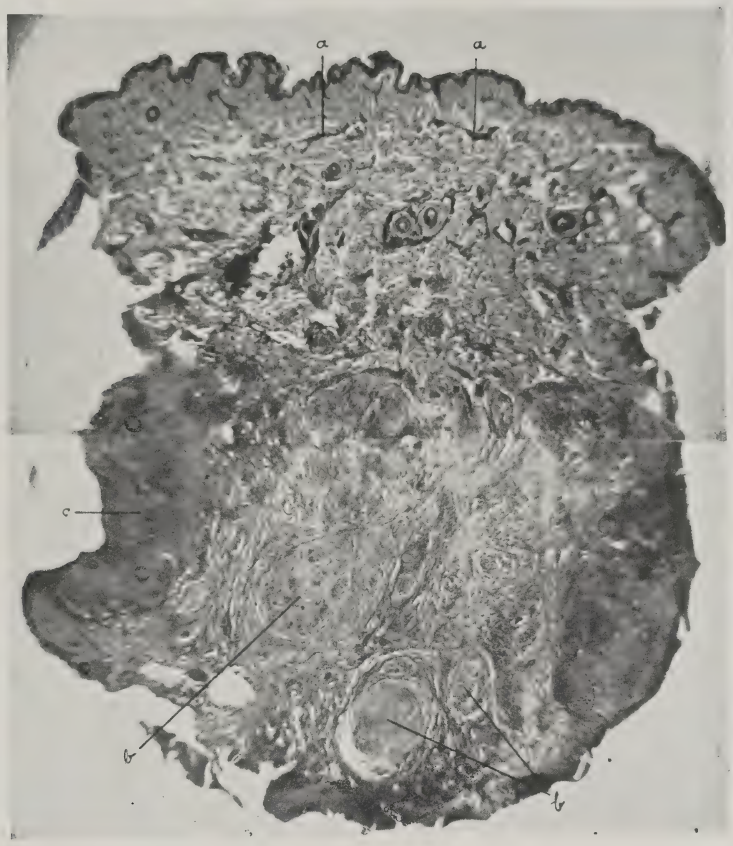

FIG. 1

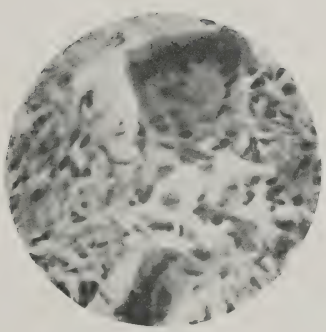

FIG. 2

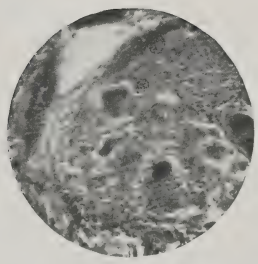

FIG. 3

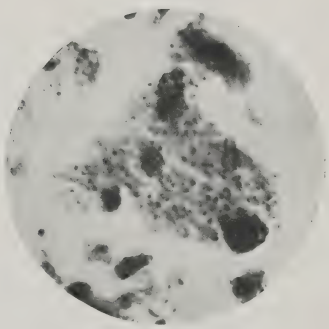

FIG. 4

C. Tinling & Co., Ltd., Imp.